

## Appendix F

### Data Element Defining And Naming Conventions

#### 1. General

Guidelines and standards exist for the naming and defining of data elements which are to be a shared resource throughout the Corps of Engineers. These standards are consistent with AR 25-9. This section reviews those guidelines and standards, as well as provides examples of acceptable data element definitions and names.

#### 2. Identification, Definition, and Naming of Data Elements

Once the entities associated with the business process are identified, defined, and named, their associated data elements, both key and descriptive, are identified, defined, and named as follows:

a. Identify the entity which the data element describes. This requires a familiarity with the business process of which the data element is a part.

b. Identify whether the data element already exists in the Corps Data Encyclopedia.

c. If it does not exist, develop a definition.

d. Use the definition to:

(1) identify a class word

(2) derive a data element name by prefixing the class word with the entity name.

(3) ask: Do the entity name and class word fully identify the data element? If not, add one or more modifiers to the class word.

e. Test the validity of the data element:

(1) Does it describe the entity?

(2) Does it have a single value for each instance of the entity?  
Is the value of this data element dependent on the whole key of the entity?

(3) Is the value of this data element dependent only on the key of the entity and no other descriptive data element?

#### Step 1. Be familiar with the business process of which the data element is a part.

a. User proponents work in identifying and defining data elements, class words, entities, and modifiers because of their familiarity with the business process.

b. A data element describes a characteristic of an entity. These characteristics are the data which are stored in the database to describe each instance of the data entity. Therefore, identifying the entity is necessary to identify the data elements.

#### Step 2. Identify whether the data element exists.

a. If the entity exists in the Encyclopedia, the data element may already exist in the

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Encyclopedia. If a data element exists, it must be used.

b. If the requested data element does not exist, a new data element may be created for that entity.

### **Step 3. If it does not exist, develop a definition.**

a. A data element definition must be unique and possess one acceptable meaning throughout the Corps of Engineers, across all functional areas.

b. A data element definition defines the data element within the context of the Corps' business. Avoid definitions that fit the entire English speaking world.

c. The data element definition must be a simple, precise, clear, English statement.

d. The definition must state "what the data element is", not "how it is used."

e. Where appropriate, the definition will define "what the data element is not."

f. The definition should be constructed using full, descriptive sentences. Definitions which are grammatically correct enhance readability.

g. The definition must include the entity which the data element is describing.

h. Abbreviations and acronyms must be avoided.

i. Reference the Data Manager's User Group (DMUG) paper, "Guidelines For Data Element Definitions," available through CEIM-PD.

### **Step 4. Use the definition to derive a data element name.**

a. A data element name is derived from the definition of the data element

b. The name must be meaningful.

c. Every data element name should consist of:

(1) The entity name of the entity being defined. The term "prime word" has been used previously and refers to the entity also. An entity name may be a word or word phrase, e.g., WORK-ITEM.

(2) A class word that identifies the use or general purpose of a data element. The class word designates the type of information being maintained about an entity, such as "amount" "name" "code," etc. A class word may actually be a word phrase, e.g., "electrical-charge." For simplicity, class word phrases will be referenced singularly as a class word.

(3) Class modifiers further define the class word and entity name in the data element name. The modifiers may be adjectives or nouns. One or more modifiers may be used to fully clarify the class word and entity name which represent the data element being defined.

ENTITY CLASS WORD CLASS  
NAME + MODIFIER(S) + WORD

The entity name comes first, followed by the class word modifier(s), and finally the class word.

### Step 5. Identifying a Class Word.

a. The class word used in the data definition must appear on the most current USACE Class Word List before it can be included in standard usage. Proposed additions to the Class Word List may be submitted to CEIM-PD.

b. The class word identifies the use or general purpose of a data element

c. The class word designates the type of information being maintained about an entity.

d. Test for class word: To identify a class word, the following question should be asked:

What type of information is being maintained about the entity?

For example:

CONTRACT-IDENTIFIER.

The entity being described is a CONTRACT and the word "identifier" describes the type of information being maintained about the entity CONTRACT. In this example, the class word is "identifier."

e. These are common errors made when naming data elements: The data element name does not adhere to standards because one or all of its components (entity, class word, modifiers) are invalid for the following reasons:

(1) The entity does not match the entity included in the definition.

(2) The class word does not match the class word included in the definition.

(3) Abbreviations or acronyms are used.

(4) The component is plural.

(5) The component contains special characters.

(6) Multiple entities are included in the name.

(7) Multiple class words are included in the name.

(8) The modifier is not necessary.

(9) Data element name components appear in the incorrect sequence.

(10) The data element name contains variable values.

(11) It is unclear which characteristic of the entity is being described and it requires additional modifiers to eliminate ambiguity of meaning.

Examples: Using the list of entity names, class words and modifiers below; derive valid data element names from the following data element definitions as follows:

<b>Entities (E)</b>	<b>Class Words (C)</b>	<b>Modifiers (M)</b>
EQUIPMENT	DATE	ESTIMATED
WORK ITEM	NAME	END
EMPLOYEE	GRADE	SERIAL
DEFECTIVE PRODUCT	NUMBER	RETURNED
AUTHORIZED CONSTRUCTION PROJECT		START LAST
SALARIED EMPLOYEE		MODEL

- Definition 1: An employee possesses this grade.  
EMPLOYEE-GRADE
- Definition 2: The piece of equipment is identified by a unique model number.  
EQUIPMENT-MODEL-NUMBER
- Definition 3: A defective product was returned to its manufacturer on a specific date.  
DEFECTIVE-PRODUCT-RETURNED-DATE
- Definition 4: An authorized construction project is scheduled to start construction on this date.  
AUTHORIZED-CONSTRUCTION-PROJECTED-SCHEDULED-START-DATE
- Definition 5: This is a salaried employee's last name.  
SALARIED-EMPLOYEE-LAST-NAME
- Definition 6: The work-item is estimated to end on this date.  
WORK-ITEM-ESTIMATED-END-DATE
- Definition 7: A piece of in-house equipment is identified by its serial number.  
EQUIPMENT-SERIAL-NUMBER

**Figure F-1: Data Element Defining and Naming Examples and Case Study**

The following set of Class word definitions has been adjusted to conform to AR 25-9, Army Data Management Program, with additions that are particularly Corps specific.

**Abbreviation** - A shortened form of a written word or phrase, used in place of a whole. Mnemonics are considered abbreviations.

**Acceleration** - The rate of change of velocity.

**Address** - The place to which written communication can be sent to a person or organization.

**Age** - The length of time a person or thing has lived or existed.

**Altitude** - The vertical distance above the earth's surface or above sea level.

**Amount** - The monetary value arrived at by counting, aggregation, or computation.

**Angle** - The measurement of the space formed by two lines diverging from a common point

**Area** - The number of unit squares equal in measure to the surface.

**Average** - The arithmetic mean of a group of numeric values.

**Category** - A division or subset in a system of classification in which all items share the same concept or taxonomy.

**Code** - A group of alphabetic letters and/or numbers that represents a specific name. Acronyms are considered codes.

**Comment** - A note explaining, illustrating, or criticizing an action, event, person, or thing.

**Coordinate** - Any of set of variables used in specifying the location of a point on a line, on a surface, or in space.

**Cost** - The amount paid or required in payment for a purchase.

**Count** - To add up one by one, by units, or groups so as to get a total number of quantity.

**Date** - The designation of a 24-hour period, commonly expressed as a year, a month, and a day.

**Date-Time-Group** - A character string specifying the date and time of day.

**Day** - A twenty-four hour period of a month as defined by the Gregorian calendar.

**Definition** - A statement expressing the essential nature of something.

**Denomination** - The value or size of a series of values or sizes as in money.

**Density** - The amount of particular items of interest per unit of measure.

**Depth** - The linear measurement downward, backward, or inward

**Figure F-2: Class Word List and Definitions**

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**Description** - A statement or account that serves to represent the characteristics or qualities of a person, place, thing, or event.

**Diffusivity** - The ability to spread out, disperse, or diffuse.

**Direction** - The point toward which something faces or the line upon which something moves or lies, i.e., north, south, east, west.

**Distance** - The extent of advance away or along from a point considered -primary or original.

**Duration** - The time that a thing exists or lasts; refers to a count of elapsed time.

**Electrical Charge** - The departure from electrical neutrality at a point by the accumulation or deficit of electrical particles, i.e., more electrons than normal produces a negative charge; fewer, a positive charge.

**Electrical Current** - The flow or rate of flow of an electrical charge in a conductor, usually expressed in amperes.

**Electrical Resistance** - The property of a conductor which opposes the flow or measurement of the flow of an electrical current, resulting in the generation of heat in the conducting material, usually expressed in ohms.

**Elevation** - The vertical height above the Earth's surface.

**Energy** - The potential forces, inherent power, or capacity for vigorous action, doing work, and overcoming resistance.

**Factor** - Any circumstances or conditions that bring about a result.

**Flow** - Any circumstances or conditions that bring about a result.

**Force** - The energy required to put an object at rest into motion or alter the motion of a moving object.

**Frequency** - The number of times any occurrence or action is repeated in a given period, usually in cycles.

**Grade** - The classification of personnel in a government organization.

**Height** - The distance from the base to the top of something standing upright.

**Hour** - One of twenty-four intervals of elapsed time into which every day is divided.

**Humidity** - The amount of water vapor in the air.

**Identifier** - A sequence of characters that identifies an object.

**Indicator** - A numeric value which represents a qualitative data value.

**Latitude** - An object's angular distance north or south from the Equator measured through 90 degrees.

**Figure F-2: Class Word List and Definitions (cont'd)**

**Length** - The longer or longest dimension of an object orthogonal to its width.

**Limit** - A maximum or minimum amount or quantity.

**Location** - A position or site on the Earth's surface represented in a specific coordinate system.

**Longitude** - The arc or portion of the Equator intersected between the meridian of a given object and the prime meridian at Greenwich, England.

**Mass** - The physical volume or bulk of a body.

**Median** - The middle value in a distribution above and below which lie an equal number of values.

**Minute** - One of sixty intervals of elapsed time into which every hour of time is divided.

**Month** - One of twelve parts into which a year is divided as defined by the Gregorian calendar.

**Name** - A designation for an object expressed in a word or words.

**Number** - A character string of numeric values used to designate an object. A number in this context cannot be used for mathematical calculations.

**Percent** - One hundredth part of a whole.

**Period** - The measured or measurable time during which an action, process, or condition exists or continues (usually has a name assigned to it, and implies two points in time which usually have been scheduled but have not necessarily occurred).

**Power** - The intensity of strength, vigor, or force of an object.

**Pressure** - A measure of applied force per unit area.

**Quantity** - Nonmonetary numeric value arrived at by counting, aggregation, or computation.

**Radioactivity** - The giving off, or capability of giving off, radiant energy in the form of particles or rays., i.e., alpha, beta, and gamma rays.

**Radius** - The length of a line segment extending from the center of a circle or sphere to the circumference or bounding surface.

**Range** - The extent covered by something.

**Rank** - The classification of personnel in a military organization.

**Rate** - A measured estimate of value, worth, strength, or capacity of a thing. **Ratio** - The calculated relation in degree or number between two similar things.

**Score** - The mark of a point with lines or notches to keep a record or an account.

Figure F-2: Class Word List and Definitions (cont'd)

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**Second** - One of sixty intervals of elapsed time into which every minute of completed time is divided.

**Size** - Physical dimensions or magnitude of an object.

**Speed** - A measurement of the change in distance with respect to time.

**Temperature** - A measure of the degree of heat or cold.

**Tension** - A measure of tautness caused by pulling or stretching.

**Text** - An unformatted character string.

**Time** - A specific point in the day.

**Torque** - A measure of a turning or twisting force.

**Total** - The sum of amounts, costs, or quantities.

**Type** - A group or category of persons or things whose distinguishing characteristics held in common clearly set it apart from related groups or categories.

**Velocity** - The rate of motion.

**Viscosity** - The degree to which a substance resists flowing.

**Volume** - The amount of space occupied by a three-dimensional figure as measured in cubic units.

**Weight** - The force with which a body of object is attracted toward the Earth by gravitation.

**Width** - The measurement of an object taken at right angles to the length.

**Year** - The designation of a period of time consisting of approximately 365 days.

**Zone** - Any area or region considered as separate or distinct from others by its characteristics or geography, agriculture, time, etc.

**Figure F-2: Class Word List and Definitions (cont'd)**



**A. Identification Class Words**

1. Abbreviation
2. Category
3. Code
4. Definition
5. Denomination
6. Description
7. Grade (Enlisted Grade)
8. Identifier
9. Indicator
10. Name
11. Number
12. Rank
13. Type

**B. Text Class Words**

1. Comment
2. Text

**C. Positional Class Words**

1. Address
2. Coordinate
3. Direction
4. Latitude
5. Longitude
6. Location
7. Zone

**D. Time-Related Class Words**

1. Age
2. Date
3. Date-Time-Group
4. Day
5. Duration
6. Hour
7. Minute
8. Month
9. Period
10. Second
11. Time
12. Year

**E. Count-Related Class Words**

1. Amount
2. Average
3. Cost
4. Count
5. Factor
6. Median
7. Quantity

**F. Measurement Class Words**

1. Acceleration
2. Altitude
3. Angle
4. Area
5. Density
6. Depth
7. Diffusivity
8. Distance
9. Electrical Charge
10. Electrical Current
11. Electrical Resistance
12. Elevation
13. Energy
14. Flow
15. Force
16. Frequency
17. Height
18. Humidity
19. Length
20. Limit
21. Mass
22. Percent
23. Power
24. Pressure
25. Radioactivity
26. Radius
27. Range
28. Rate
29. Ratio
30. Score
31. Size
32. Speed
33. Tension
34. Temperature
35. Torque
36. Total
37. Velocity
38. Viscosity
39. Volume
40. Weight
41. Width

**Figure F-3: Class Words by Category**